

# Higher Strength, Lighter Weight Aluminum Spacecraft Structures, Phase I

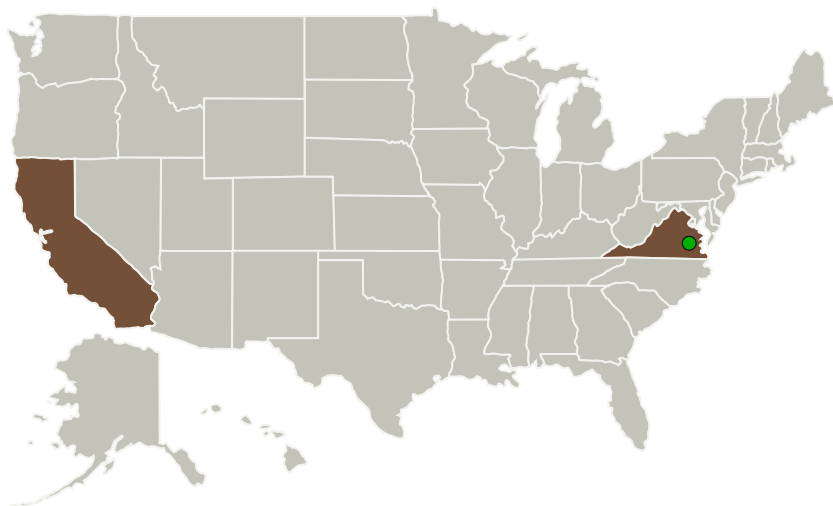
Completed Technology Project (2014 - 2014)



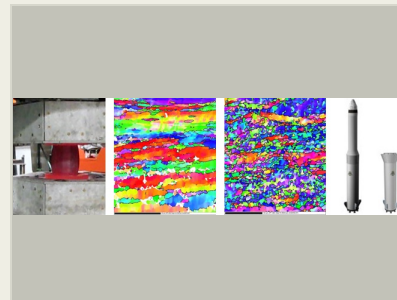
## Project Introduction

This SBIR Phase I program proposes to develop a bulk processing technology for producing ultra fine grain (UFG) aluminum alloy structures. The goal is to demonstrate a practical, production level manufacturing approach for producing bulk-sized aluminum alloy structures and eventually near-net shape components with nano-scale microstructures. Ultra fine grain aluminum alloys could be particularly advantageous for higher performance, lighter weight spacecraft structures, airframes, and space-frames and structural components needed for next generation commercial and military systems. The effect of different thermo-mechanical conditions to achieve the requisite microstructure-properties also needs to be understood, and will be developed in this project.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



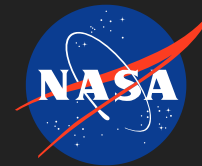
Higher Strength, Lighter Weight Aluminum Spacecraft Structures Project Image

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## Primary U.S. Work Locations

California

Virginia

## Project Transitions



**June 2014:** Project Start

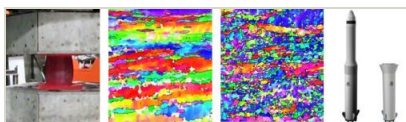


**December 2014:** Closed out

### Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137523>)

## Images



### Project Image

Higher Strength, Lighter Weight Aluminum Spacecraft Structures Project Image

(<https://techport.nasa.gov/image/132874>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Transition45 Technologies, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

### Principal Investigator:

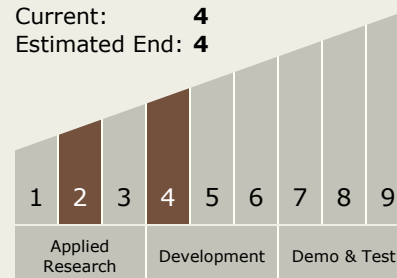
Edward Chen

## Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4



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## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.1 Materials
    - └ TX12.1.1 Lightweight Structural Materials

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System